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1. **Analytical Methods:**

    1. Surface water and ground water: Analytical methods with detection limits for all analytes as specified in the Ecological Benchmarks for Water, Table 3-2: *"Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas"*; December 2001; RG-263 (revised), including any updates.
    2. Sediment: Analytical methods with detection limits for all analytes as specified in the Ecological Benchmarks for Sediment, Table 3-3: *"Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas",* including any updates.
    3. Soil north of Marlin Ave.: Analytical methods with detection limits for all analytes as specified in the EPA Ecological Soil Screening Levels; or Ecological Benchmarks for Soil, Table 3-4: *"Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas",* including any updates, for analytes not included in EPA's Ecological Soil Screening Levels.
    4. Soil south of Marlin Ave.: either:
        1. Field based decision making and analytical methods ("TRIAD") that meet Data Quality Objectives (DQOs) for Site (but only for soil south of Marlin Ave.); or
        2. CLP Method OLM04.3 for organic compounds (including volatile, semi-volatile, and pesticide/PCB); and CLP Method ILM05.3 for inorganic compounds.

2. **Soil Samples:** (approx. 200 ft. grid spacing north of Marlin Ave - 30 samples; 100 ft grid spacing south of Marlin Ave - 90 samples; and 20 biased samples)

    1. 140 samples @ 0" - 6", for semi-volatiles, pesticides/PCBs, and inorganics analysis.
    2. 140 samples @ 12" - 24", for volatiles, semi-volatiles, pesticides/PCBs, and inorganics analysis.
    3. Background soil samples: 6 samples from each of two locations, NE and NW of Site, collected using same methods as Site soil samples.

3. **Ground Water Samples:**

    1. 60 samples - approx. 200 ft grid spacing; perform shallow sampling in area of impoundments to define potential DNAPL area; then perform deeper sampling as necessary to define vertical extent outside of any DNAPL area to avoid dragging down DNAPL. Monitoring wells may be required if contamination exceeds maximum direct push depth capability.
    2. Collect cores at 10 locations.

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4. **Surface Water Samples:**

    1. Wetlands north of Site: 15 samples
    2. Fresh Water Ponds in Lot 55: 6 samples (3 samples in each pond)

5. **Sediment Samples:**

    1. Wetlands north of Site: 15 samples
    2. Barge slips and Intracoastal Waterway: 12 locations - at each location, one sample at surface of sediment, and one sample at 12" to 24" (24 sediment samples total).
        1. 4 locations in Barge Slip No. 1;
        2. 4 locations in Barge Slip No. 2; and
        3. 4 locations in the Intracoastal Canal nest to the Site.
    3. Fresh Water Ponds in Lot 55: 6 surface sediment samples (3 samples in each pond)

6. **Fish/Crab Samples:**

    1. Intracoastal Canal adjacent to Site: 3 filet samples from each of 3 edible fish species (9 total), fish to be larger than keeper size limits; 3 crab samples from one crab species.
    2. Background: 3 filet samples from each of 3 fish species (9 total), fish to be larger than keeper size limits; 3 crab samples from one crab species.
    3. Only analyze for semi-volatiles, pesticides/PCBs, and inorganics (no VOC analysis).

7. **Notes:**

    1. Number of samples is based on environmental sampling only. Additional samples will be required for the QA/QC requirements (i.e., field blanks, trip blanks, duplicates, MS/MSD, etc.)
    2. Number of samples is for the initial sampling phase. Additional sampling may be required if initial sampling is not sufficient to define horizontal and vertical extent of contamination, or to better define "hot spots", or to fill in any data gaps.
    3. Vertical/horizontal extent based on following benchmarks:
        1. Soil:
            1. North of Marlin Ave.: EPA Ecological Soil Screening Levels; or, in not available, then TCEQ Ecological Benchmarks for Soil, Table 3-4.
            2. South of Marlin Ave.: EPA Region 6 Soil Screening Levels for

commercial/industrial human health exposure.

3. No deeper than the water table.

2. Ground Water: TCEQ Ecological Benchmarks for Water, Table 3-2; ground water PRGs based on ecological receptors because of potential for migration to surface water.
3. Sediment: TCEQ Ecological Benchmarks for Sediment, Table 3-3.
4. Surface Water: TCEQ Water Quality Standards, or, if not available, then Ecological Benchmarks for Water, Table 3-2.

4. Do not composite samples.
5. Surface water metals analysis shall be performed on both filtered and unfiltered samples. Also, pH and hardness shall be determined for all surface water samples.
6. Grain size and total organic carbon (TOC) shall be measured on all sediment samples.
7. Fish/crab sampling outlined here shall be only for the purpose of human health risk assessment.
8. Additional biological data and co-located media data collection will be necessary for a baseline ecological risk assessment if contaminants exceed the ecological screening benchmarks.
9. Commercial/industrial cleanup levels will require institutional controls if remediation will not result in unrestricted use and access.

8. **Interim Actions:**

1. Construct a fence with locked gates and warning signs around Site to prevent access.
2. Remove and properly dispose of hazardous substances in tanks located at the Site.
3. Decontaminate and/or properly dispose of contaminated tanks located at the Site.
4. Remove contaminated sludge and soil in the area of, and below, the former impoundments that are above the EPA Region 6 Soil Screening Levels for the Industrial Outdoor Worker.
    1. The maximum excavation depth shall be 25 feet below the ground surface.
    2. The excavated soil shall be characterized and properly disposed of.
    3. After sampling for verification that soil screening levels have been achieved, or after reaching the maximum excavation depth and sampling to characterize the remaining contamination, the excavated areas shall be backfilled with clean soil, verified by sampling, and graded to previous contours and seeding.
5. Locate and map off-site water wells within one-half mile of the Site boundary.

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9. **Site Background Information:**

1. Site was placed on the NPL effective May 30, 2003, in a final rulemaking published on April 30, 2003 (68 FR 23077).
2. A residential development exists approximately 500 feet southwest of the Site on the Intracoastal Waterway.
3. Offshore Services, Inc., is located adjacent to the Site on the east. It is a docking and staging area for supplying fuel, drilling mud, chemical additives, and cement to offshore drilling rigs.
4. Discharges occurred from the former waste impoundments in July 1974 and August 1979 (EPA inspection report, 7/15/1980). Impoundments closed in 1982.
5. Tank farm area had no containment levees or dikes in 1989; presently contained by concrete berm. Water in concrete berm contained chloroform and 1,2-dichloroethane (LTE Report, 6/1999).
6. Benzene in ground water in former impoundment area at 8,180 µg/L (Fish, 1982, well screened from 38 ft. to 48 ft.).
7. Volatile organic compounds and pesticides detected in two monitoring wells near the former impoundments (Hercules, 12/1989, wells screened 8 ft. to 18 ft.).
8. Chlorinated solvents in ground water in former impoundment area up to 32% of solubility, indicating presence of "dense non-aqueous phase liquids" (DNAPL) (HRS Documentation Record, 2/2002, wells screened 10 ft. to 24 ft.).
9. Shallow ground water is salty (32,000 to 50,000 mg/L total dissolved solids), but overlays a drinking water aquifer. Depth to top of aquifer unknown. A former drinking water well (used until 1984), just west of the Site, was screened from 188 ft. to 198 ft, with a 63 ft. water table (E & E, Screening Site Inspection, 1989).
10. Soil sampling documented hazardous substances above background concentrations and above the sample quantitation limits (TCEQ, 2000).
11. One out of two sediment samples from the fresh water pond contained 0.0027 mg/kg toluene. Semi-volatiles and pesticides not analyzed (LTE Report, 6/1999).
12. Sampling documented releases of hazardous substances from the Site to the sediment in the Intracoastal Waterway (TCEQ, 2000).
13. Intracoastal Waterway is considered a fishery (HRS Documentation Record, 2/2002). The local community is concerned about fish and crab consumption.